# NEW BRUNSWICK

# INDUSTRY PROFILES

## NO. 1

## PULP AND PAPER MILLS

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# INTRODUCTION

In constructing a profile of the pulp and paper industry, we are fully cognizant of the fact that extensive work is underway and almost completed in the area of forestry and forest related industries in New Brunswick. Nevertheless, the decision was made to proceed with this industry for two main reasons: (1) a summary profile will enable the lay reader to obtain as complete a picture as possible without necessitating a thorough review of all of the reports and statistics that are available (2) it will enable a direct comparison of the profile with the more comprehensive effort so that we may adjust and improve our future profiles on other industries.

If the reader is interested in more detailed explanations or investigations of the pulp and paper industry, there are several documents which go much further in focusing on specific problems of the industry. A good overview of the whole industry can be found in the Report of the Industrial Inquiry Commission on the Pulp and Paper Industry in New Brunswick - 1972.

## SUMMARY PROFILE

GROWTH - Increases in shipments and employment from 1961-1970 have kept pace with Canadian growth rates but have lagged slightly behind all New Brunswick manufacturing industry. The time growth trends indicate that the low rate of growth in value added is a serious problem for the industry.

PRODUCTIVITY - Productivity has kept pace with the Canadian industry and Nova Scotia except for one exceptional year in that Province. It has exceeded productivity growth rates for all manufacturing in New Brunswick.

SIZE - With 23.14% of manufacturing shipments accounted for by pulp and paper, New Brunswick is exceeded only by Newfoundland in its reliance on pulp and paper mills.

LABOUR - While gains in the hourly labour wage rate for the New Brunswick industry have been comparable to other Provinces and the Nation as a whole, a large part of the increase accrued during 1971. Despite the respectable showing, in percentage increases, the average hourly wage was the lowest of any of the six Provinces which account for almost all of total national production.

MATERIAL COSTS - Material, fuel and electricity costs are 73% of total output compared to 56% for the Canadian average in the industry.

TRANSPORTATION - Increasing use is being made of harbour facilities, and Saint John has rapidly become the most important port for loadings of pulp and paper products.

MARKETS - Exports to foreign countries are increasing at high rates. Market prospects augur well for future world demand.

ECONOMIC IMPACT - The size and inter-industry relationships indicate that the pulp and paper industry plays a major role in the functioning of the provincial economy. Table X shows the extent of these impacts on incomes, industries and gross domestic product. Multipliers in that industry are relatively high and given the size of the initial first round impacts, the resulting totals are larger than most other industries: wage and salary multiplier - 3.2; employment - 5.1; gross domestic product - 3.7.

## GROWTH

It has been traditional to look at industry performance by first assessing growth rates of the "principal statistics" which include employment, value added and shipments data. These assessments are usually made in terms of comparisons with growth rates for other industries or with the same industry for another geographic area.

Chart I illustrates the growth of these three variables in comparison with the Canadian pulp and paper industry. Charts I(a) (b) and (c) are growth indexes which facilitate a direct comparison with Canadian growth. They are not adjusted for price changes.

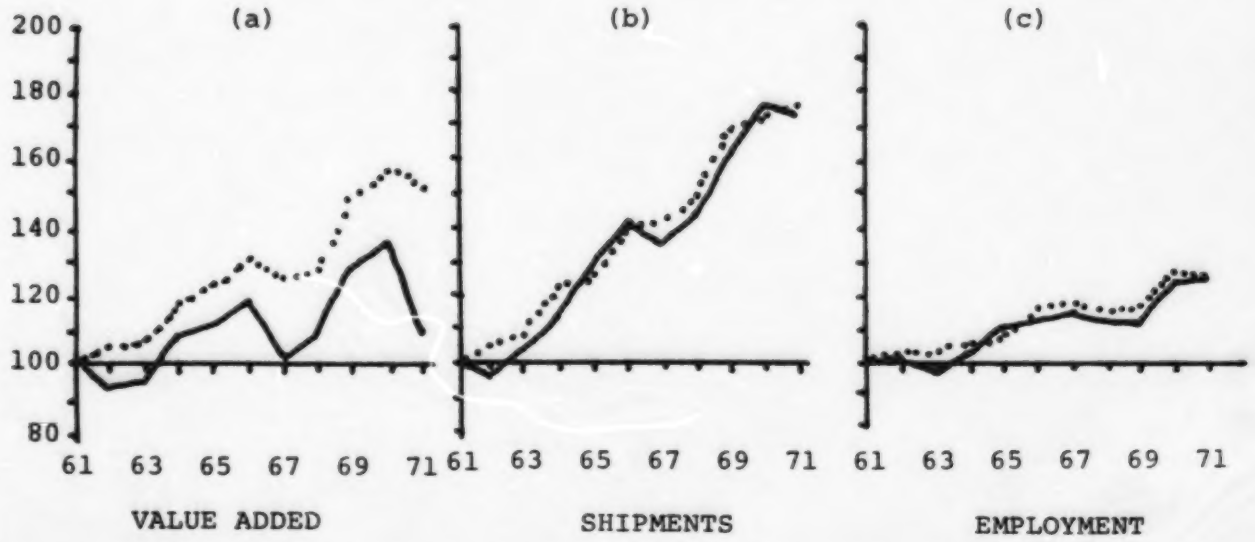
In spite of indications of problems in recent years in New Brunswick pulp and paper mills, it appears that growth in employment and total shipments has paralleled that of the Canadian industry rather closely (see Charts I(b) and (c). Shipments increased by only 1.4% less and the employment increase was only 1.5% less than for Canada as a whole.

However, the disturbing aspect about these "general" statistics is that value added has grown by a far lower amount than in all Canadian mills. An increase of 9.5% between 1961 and 1971 is very low in comparison with the Canadian increase of 51.4%. Implicit in this trend is an indication that the cost of materials and energy are growing at a substantially faster rate (Table III) than in the rest of the country. In other words, there may be an increasing trend in the Province for a relative decline in labour costs as a proportion of the total value of the product. This implication is somewhat born out by observed changes in hourly rates (see Table II) and statements by mill operators concerning the price of material inputs.

CHART I

Pulp and Paper Mill Growth Indexes for Value Added Employment and Shipments - New Brunswick and Canada
1961 = 100

— N.B.
··· CAN.

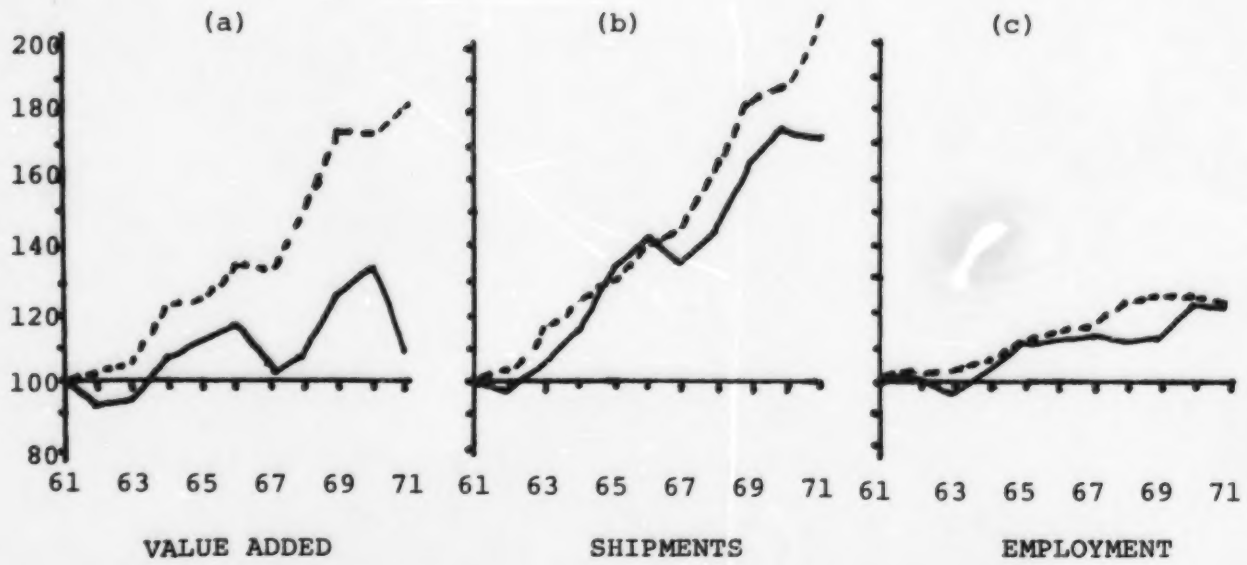



Source: Pulp and Paper Mills, Statistics Canada; 36-204.

The same comments may well be applied to the comparison with all manufacturing industries in New Brunswick (Chart II). While growth in employment and shipments is only slightly less than for total manufacturing, the change in value added is almost 75% less. Again, this may be symptomatic of high cost material, fuel and electricity inputs relative to costs in other N. B. industries and also relative to labour costs in the pulp and paper industry.

CHART II

Pulp and Paper Growth Indexes Compared to All Manufacturing in New Brunswick
1961 = 100
— N.B. Pulp & Paper
-- N.B. Manufacturing




Source: Pulp and Paper Mills, Statistics Canada; 36-204

## PRODUCTIVITY

Although productivity can be measured in a number of ways, the difficulty lies in attributing those amounts of increased production to new equipment, better technology, a more skilled labour force or better management techniques. In terms of labour productivity, there are several measures, and for our purposes output per man-hour is used.

Chart III shows the dollar output per man-hour for pulp and paper mills in Nova Scotia, New Brunswick and Canada. Also, we have added output levels per man-hour for all manufacturing establishments in New Brunswick for comparison with average labour productivity in the Province.

Several interesting aspects of this comparison are immediately obvious:

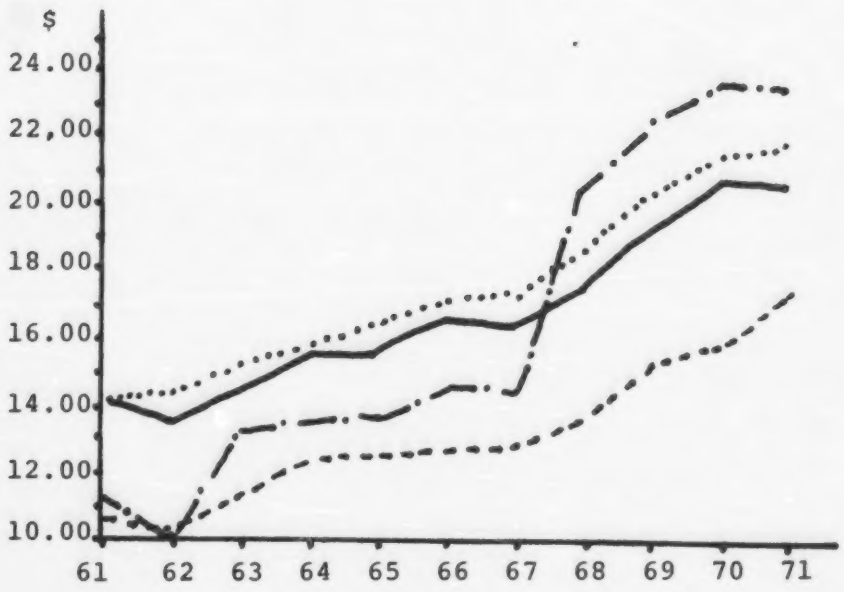
- productivity in N. B. mills is only $1.40 per man-hour less than Canadian mills, and the growth has almost matched Canadian rates.
- in spite of the fact that output per man-hour in N. S. mills is $2.76 higher than in New Brunswick, growth rates for New Brunswick roughly matched N. S. rates except for the one year, 1968, when the Scott Paper mill at Abercrombie came on stream and N. S. output per man-hour increased by $5.84.

- growth rates in pulp and paper mills compared to all manufacturing establishments were significantly higher and by 1971 the difference reached $3.12 per man-hour. This trend might partially be explained by new mills coming on stream and additions to old ones during the 10 year period.

CHART III

$ of Output Per Man-Hour
N.B., N.S. and Canadian Pulp and Paper Mills
and Total Manufacturing - N.B.

—·— N.S. Pulp and Paper
····· Can. Pulp and Paper
——— N.B. Pulp and Paper
----- N.B. Total Manufacturing




Source: Pulp and Paper Mills, Statistics Canada; 36-204

## SIZE

In terms of relative size, the New Brunswick economy is highly dependent on pulp and paper mills. In 1971 18.3% of manufacturing employment and 23.1% of shipments was contributed by this important sector, and although the proportions have declined slightly over the years, the magnitude of these proportions make it by far the most important employment and income generator in the manufacturing sector.

In terms of shipments, Newfoundland is the only province more dependent than New Brunswick on its pulp and paper mills. In that Province the industry accounted for 24.79% of shipments while in British Columbia, Nova Scotia, Quebec and Ontario the comparable figures are 15.58%; 10.14%; 7.42% and 2.77%, respectively. This compares with New Brunswick's pulp and paper shipments, which were 23.1% of total manufacturing shipments for that year.

TABLE I

Pulp and Paper Shipments
As A % of All Manufacturing Shipments
1971

| | % |
|---|---|
| New Brunswick | 23.14 |
| Newfoundland | 24.79 |
| Nova Scotia | 10.14 |
| Quebec | 7.42 |
| Ontario | 2.77 |
| British Columbia | 15.58 |
| Canada | 5.63 |

Source: Pulp and Paper Mills, Statistics Canada; 36-204

## LABOUR

The total wage bill for the 5,214 employees in the pulp and paper industry in 19[illegible] was $47,288,000, or 27.3% of the total manufacturing wage bill. This represents an increase of 127.5% over 1961 when it was 27.1% of the manufacturing total.

Average hourly wage rates in the industry are the lowest of any of the six major pulp and paper producing Provinces, despite the gain of 77.6% between 1961 and 1971. However, only British Columbia ($4.905 per hr.) and Newfoundland ($4.213 per hr.) were more than $.15 above the New Brunswick rate of $3.95 per hour.

TABLE II

Hourly Wage Rates in New Brunswick Mills Compared to Nova Scotia, British Columbia, Ontario and Canada

($ per Hr.)

| | 1961 | 1968 | 1969 | 1970 | 1971 | % Change 1971/1961 |
|---|---|---|---|---|---|---|
| New Brunswick | 2.225 | 3.083 | 3.219 | 3.475 | 3.952 | 77.6 |
| Newfoundland | 2.557 | 3.518 | 3.966 | 3.895 | 4.213 | 64.8 |
| Nova Scotia | 1.982 | 2.807 | 3.126 | 3.538 | 4.092 | 106.5 |
| Quebec | 2.271 | 3.192 | 3.470 | 3.662 | 3.983 | 75.4 |
| Ontario | 2.317 | 3.243 | 3.435 | 3.717 | 4.023 | 73.6 |
| British Columbia | 2.618 | 3.897 | 4.203 | 4.537 | 4.905 | 87.4 |
| CANADA | 2.335 | 3.320 | 3.557 | 3.810 | 4.177 | 78.9 |

Source: Pulp and Paper Mills, Statistics Canada 36-204.

N.B. = $\frac{1971}{1961}$ increase in Industrial Composite - 63.62 to 104.00 = 63.5%

## MATERIAL COST

Table III shows fuel, electricity and material costs as a % of total shipments. The figures confirm earlier suspicions that costs of inputs have increased at a much faster rate than in other parts of Canada. For Canada, the proportion of shipments accounted for by these costs increased from 48.9% in 1961 to 56.4% in 1971, a change of slightly more than 5% of the total amount. For New Brunswick the amount increased by almost 20% as a proportion of total shipments to a national high among the Provinces of 73.0%. In the other pulp and paper producing provinces the ratio ranges between 52.4 and 59.5%. The impact of these proportions is basically that: (1) the competitiveness of New Brunswick plants with respect to other Canadian mills is seriously threatened unless the input prices are stabilized (2) the return available for capital (expansions, modernizing mills, etc.) and for labour is much less than in other areas.

TABLE III

Materials, Fuel and Electricity
As a % of Shipments

| | 1961 | 1971 |
|---|---|---|
| New Brunswick | 53.4 | 73.0 |
| Nova Scotia | 46.1 | 59.5 |
| Newfoundland | 47.6 | 53.4 |
| Quebec | 49.6 | 54.9 |
| Ontario | 51.5 | 54.6 |
| British Columbia | 42.0 | 55.8 |
| CANADA | 48.9 | 56.4 |

Source: Pulp and Paper Mills, Statistics Canada; 36-204

## TRANSPORTATION

Submissions to the Industrial Inquiry Commission and the Commission's report itself have noted that transportation costs are of major concern to New Brunswick mills. While mills in other parts of North America incur rail transport costs of up to $5 per cord for wood inputs and a maximum of 9% of total cost for pulp output, New Brunswick mills may pay as high as $13 per cord for wood inputs and the transport cost of the pulp output ranges up to 25% of the total cost of the final product. Clearly, if this situation is combined with the problem of high material input costs, the New Brunswick industry is at a distinct disadvantage compared to competing mills in North America. Unfortunately, comparative transport cost data are not readily available and therefore the reader should consult the Industrial Inquiry Commission report or the work of the Forest Resources Study Group for more information.

In spite of the great reliance on rail transport, a large part of it for internal shipments, ocean transport is rapidly becoming a significant factor in transportation considerations for the industry. Table IV shows the increase in pulp and paper products loaded by port in New Brunswick for 1961 and 1970.

TABLE IV

Pulp and Paper Products Loaded
By Port, 1961 and 1970
New Brunswick
(Cargo Tons)

| | Bathurst | Chatham | Dalhousie | Newcastle | St. John | Other | Total |
|---|---|---|---|---|---|---|---|
| 1970 | | | | | | | |
| Wood Pulp | - | 3,415 | 11,381 | 115,529 | 212,685 | - | 343,010 |
| Newsprint | - | - | 245,238 | - | 136,893 | - | 382,131 |
| Other Paper | 57,929 | - | 77 | 23 | 21,083 | 5,724 | 84,836 |
| TOTAL | 57,929 | 3,415 | 256,696 | 115,552 | 370,661 | 5,724 | 809,977 |
| 1961 | | | | | | | |
| Wood Pulp | - | - | 4,441 | 18,992 | 11,057 | 2,561 | 37,051 |
| Newsprint | - | - | 207,996 | - | 34,624 | 1,605 | 244,225 |
| Other Paper | 1,197 | - | - | - | 8,978 | - | 10,175 |
| TOTAL | 1,197 | - | 212,437 | 18,992 | 54,659 | 4,166 | 291,451 |

Source: Statistics Canada 54-203.

Most of the 178% increase in tonnage was accounted for by increases in shipments of pulp from Newcastle, and both pulp and paper from Saint John. Saint John has now surpassed Dalhousie in terms of total cargoes shipped and these two, combined with Newcastle now account for the majority of pulp and paper cargoes loaded.

Rail loadings of these products increased by 48.9%. While there was some increase over the ten year period in wood pulp and newsprint, other paper products declined sharply in the use of rail facilities.

TABLE V

Loadings of Pulp and Paper Products
On to Railway Cars, New Brunswick - 1961 and 1970

| | 1961 | 1970 |
|---|---|---|
| Wood Pulp | 308,413 | 493,301 |
| Newsprint | 27,016 | 174,512 |
| Other Paper | 151,975 | 57,952 |
| TOTAL | 487,404 | 725,765 |

Source: Statistics Canada 52-205

## MARKETS

It is clearly evident that the New Brunswick pulp and paper industry sells most of its output to other Provinces or nations and the amounts that are domestically consumed are mostly in the form of intermediate sales between mills.

### Exports

Foreign exports of this industry grew to a value of $205,408,898 by 1972, representing a 17.4% increase over the previous year.

TABLE VI

Exports of Pulp and Paper Products
From New Brunswick, 1970-1972

| | | 1972 (3 Quarters) | 1971 | 1970 |
|---|---|---|---|---|
| Wood Pulp | Q(CWT) | 18,371,218 | 14,030,973 | 14,101,666 |
| | V($) | 108,257,396 | 91,120,864 | 88,193,398 |
| Newsprint | Q(CWT) | 11,421,402 | 9,892,591 | 8,589,922 |
| | V($) | 86,333,029 | 73,333,091 | 62,398,601 |
| Other Paper[1] | Q(CWT) | 2,140,440 | 2,176,951 | 1,550,437 |
| | V($) | 10,818,473 | 10,549,472 | 7,321,201 |
| TOTAL | Q(CWT) | 31,933,060 | 26,100,515 | 24,242,025 |
| | V($) | 205,408,898 | 175,003,427 | 157,913,206 |

1. Almost all of this category is composed of paperboard.

NOTE: Some of these shipments may be transhipments from other Provinces. It is almost impossible to remove these amounts.

Source: Unpublished tabulations based on information from Statistics Canada.

Projected Demand

In spite of recent problems in international markets, shipments of products from this industry to other countries continue to grow and if the market forecasts provided by Arthur D. Little Inc. for the Industrial Inquiry Commission are near accurate, the prospects for potential sales in the future appear to be bright.

TABLE VII

Projected Free World Demand for
Pulp and Paper Products
(000'000 Metric Tons)

| | 1970 | 1974 | 1976 | % Change 1976/1970 |
|---|---|---|---|---|
| Paper Products | 110.8 | 138.3 | 153.0 | 38.1 |
| Bleached Chemical Pulp | 30.87 | 40.3 | 44.0 | 42.5 |
| TOTAL | 141.67 | 178.6 | 197.0 | 39.1 |

Source: Report of the Industrial Inquiry Commission on the Pulp and Paper Industry in New Brunswick, July 1972 - Pg. T-6, T-9, Tables - A-3 and A-4.

In terms of historical trends in world demand for newsprint, the 1965 to 1971 increase was 29.4%. This is considerably less than the predicted 38.1% increase in world demand of all paper products.

The extent to which New Brunswick mills are able to take advantage of the projected demand and the extent to which material and transport input costs can be controlled, will determine the future path of the industry and a large part of the manufacturing base in New Brunswick.

## Sales Distribution

The input-output tables for New Brunswick and Canada provide estimates of the markets and the inter-industry use of pulp and paper products. Table VIII shows these markets as a % of total output.

Note that the import of these commodities is very low. Also of importance is the difference between intermediate or industry purchase of pulp and paper output in N. B. and Canada. Canada's intermediate use is 49.14% of output and New Brunswick's is 15.67%. The major reason for this, of course, is that New Brunswick exports most of the output while for Canada as a whole, much of the output is sold to large packaging industries, pulp to paper mills, etc.

TABLE VIII

Sales to Industries, Exports and Other Final Demand as a % of Total Output - New Brunswick (1965) and Canada (1961)

| | | New Brunswick % | Canada[1] % |
|---|---|---|---|
| Meat, Dairy and Fruit | | 1.37 | 2.86 |
| Misc. Food Products | | 2.57 | 4.21 |
| Pulp and Paper Products | | 7.83 | 14.36 |
| Printing | | .57 | 7.30 |
| Construction | | .62 | 3.42 |
| Retail and Wholesale Trade | | .21 | 4.08 |
| Other Industries | | 2.50 | 12.91 |
| TOTAL INTERMEDIATE | | 15.67 | 49.14 |
| Exports | | 87.26 | 50.64 |
| - Atlantic | 1.52 | | |
| - Rest of Canada | 22.28 | | |
| - Foreign | 63.46 | | |
| Imports | | -4.90 | -3.95 |
| Other Sales | | 5.12 | 2.21 |
| TOTAL SALES | | 100.00 | 100.00 |

[1] These coefficients include sales of "Other Paper Products" as well as sales for pulp and paper mills.

## IMPACT ON THE ECONOMY

### Inputs from Industries, Households and Imports - Initial Impact

Table IX shows industry supplies, imports, taxes and wages and salaries as a per cent of industry output levels for New Brunswick and Canada. These coefficients describe the initial impact on the economy when industry output is increased by a given amount. The figures are quite comparable to Canadian averages except for pulp and paper, petroleum and transportation inputs, all of which are higher in New Brunswick. It is interesting to note that the wage and salary component is much lower in New Brunswick while the import content is 15.43%, compared to a very small amount for the nation.

Assuming an increase in output in New Brunswick of $1M; we can see that forest products will supply $192,000 worth of inputs, petroleum will supply $21,700, wages and salaries will go up by $207,000 and so on for all other inputs.

TABLE IX

Supplies and Inputs as a % of Total Outputs - New Brunswick (1965) And Canada (1961)

| | New Brunswick[1] % | Canada[1] % |
|---|---|---|
| Forest Products | 19.20 | 20.87 |
| Coal | 2.20 | 1.15 |
| Sawmills | 3.10 | 2.51 |
| Pulp and Paper Products | 7.80 | 4.70 |
| Fabricated Metal Products | .84 | .81 |
| Petroleum | 2.17 | 1.05 |
| Transportation, Travel and Entertainment | 5.36 | 4.01 |
| Electric Power, Water & Gas | 4.12 | 4.13 |
| Retail and Wholesale Trade | 3.82 | 3.61 |
| Finance and Real Estate | .33 | .68 |
| Business Services | 1.89 | .34 |
| Other Supplies & Services | 1.68 | 8.84 |
| Total Intermediate | 52.51 | 52.70 |
| Wages and Salaries | 20.77 | 22.53 |
| Imports | 15.43 | - |
| Other | 11.29 | 24.77 |
| TOTAL INPUTS | 100.00 | 100.00 |
| GROSS DOMESTIC PRODUCT | 39.44 | - |

1. The coefficients are not strictly comparable because different years are used, necessitated by the availability of only 1965 tables for New Brunswick and 1961 tables for Canada. Also definitions and classification vary between the two tables making comparisons difficult.

## Indirect Effect on Industries - Inter-Industry Linkages

In order to determine the total output that is created in the economy as a result of a unit increase in output in pulp and paper, we must measure not only those inputs as described in Table IX, but also those outputs that are created as a result of those industries (e.g. forestry) which must buy other commodities (e.g. - machinery and gasoline) to cut pulp wood which is used in the pulp and paper industry. In turn, the machinery and gasoline industries must buy from other industries to produce the machines and gas sold to the pulpwood cutters. This process goes on and on until it peters out because of import leakages. Table X describes the impact[1] on all industries as a result of a unit increase in pulp and paper output.

From Table X, we can see that a million dollar increase in pulp and paper output will mean a <u>total</u> effect on electric power, water and gas of $45,600; on personal and business services of $24,900; on wages and salaries of $412,800, and so on. The impacts compare favourably with National figures, although it is obvious that they should not be as high since there is less import leakage in a national compared to a provincial economy.

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1. It should be noted that some of the results are actually lower than the initial impact in Table IX. This is because some of those output in Table IX are a result of imported commodities. Table X nets out all of these imports.

TABLE X

Impact[1] of Pulp and Paper Mills on All Industries -
(Model I Results of Those Including ONLY Inter-Industry Transactions)
New Brunswick and Canada - % of Total Output

| | New Brunswick % | Canada % |
|---|---|---|
| Agriculture | .81 | 2.61 |
| Forestry | 19.08 | 23.00 |
| Saw Mills | 2.12 | 2.50 |
| Pulp and Paper | 106.51 | 103.38 |
| Petroleum | 3.42 | 2.35 |
| Construction | 1.34 | 2.15 |
| Transportation, Travel & Entertainment | 8.08 | 8.00 |
| Radio, Telephone & Telegraph | 1.50 | .93 |
| Electric Power, Water & Gas | 4.56 | 5.76 |
| Retail and Wholesale | 4.86 | 5.34 |
| Finance, Real Estate | 1.90 | 4.80 |
| Personal & Business Services | 2.49 | 2.94 |
| Other Industries | 4.27 | 18.67 |
| TOTAL INDUSTRY OUTPUT | 160.94 | 182.43 |
| Wages and Salaries | 41.28 | 45.73 |
| Imports | 21.97 | 10.85 |
| Depreciation, Profit, Taxes & Other | 27.93 | 37.46 |
| GROSS DOMESTIC PRODUCT | 78.94 | N/A |

1. Table IX describes inputs as a % of output without taking account of imports. This impact table reduces the impact by those amounts of inputs that must be imported. Consequently, some of the results are lower than the value of the original inputs.

The total impact on all industry output levels is $1,609,400 in New Brunswick compared to $1,824 for an increase of $1 million for National figures. It is interesting that the total impact on Gross Domestic Product is now $789,400 compared to $394,000 for the initial impact (Table IX)

Total Impact on Incomes and Industries - Taking account of effects from re-spending wages and salaries and government revenues

To determine the total impact on the economy resulting from a unit increase in output of pulp and paper mills, we must further take account of the effects on industry and incomes created by the spending of wage earners in all industries and the re-spending of government revenues.

When people employed in those industries buy commodities (e.g. frozen vegetables), the frozen vegetable industry must employ more people and buy more products from other industries (e.g. farmers) in order to produce the frozen vegetables to be sold to the wage earner. These additional employees also spend more money and so the process goes on until it "peters out" because of savings and imports. The same principle applies to provincial and municipal governments which receive tax revenues and spend that money within the economy. When these effects are combined with those described in Table X the result if the total impact on the economy.

Now, as a result of recirculating taxes and wages and salaries - industry output levels, wages and salaries and other inputs are significantly higher as shown in Table XI. For example, a $1 million increase in output has a total impact on wages and salaries of $667,900, compared to an initial impact of $207,700 (Table IX) and Gross Domestic Product is now $1,442,200 compared to $394,400 on the initial round (Table IX). The substantial increase in the utilities and service sector output levels should be noted (particularly, retail and wholesale distributors) and this is primarily a result of increased demands from households and governments added to the initial industry demands.

TABLE XI

Impact of Pulp and Paper Mills on All Industries -
(Model III - Includes Re-Spending of Incomes and Government Revenues)
New Brunswick - % of Total Output

| | |
|---|---|
| Agriculture | 3.79 |
| Forestry | 20.58 |
| Coal | 2.44 |
| Meat, Dairy & Fruit | 3.65 |
| Miscellaneous Food | 2.58 |
| Soft Drinks, Distillers, & Brewers | 1.32 |
| Saw Mills | 2.59 |
| Pulp and Paper | 107.05 |
| Petroleum | 6.32 |
| Construction | 7.28 |
| Transportation, Travel & Entertainment | 15.68 |
| Radio, Telephone & Telegraph | 3.62 |
| Electric Power, Water & Gas | 6.74 |
| Retail & Wholesale | 15.25 |
| Auto Operation | 5.80 |
| Finance, Real Estate | 5.30 |
| Dwelling Services | 7.26 |
| Hotels, Restaurants | 1.95 |
| Personal & Business Services | 8.24 |
| Other Outputs | 5.23 |
| ALL INDUSTRIES | 227.44 |
| Wages and Salaries | 66.79 |
| Imports | 40.12 |
| Other | 34.93 |
| GROSS DOMESTIC PRODUCT | 144.22 |

## MULTIPLIERS

The multiplier concept is a convenient method of expressing relationships between initial and final effects. The traditional Keynesian or consumption multiplier is not provided here. Nevertheless it is an integral part of the process, and is incorporated in those that are provided. This is that part of the impact that accrues as a result of household spending. The multiplier is simply the RATIO of the results in Table IX to the results in Table XI. For example the total impact on wages and salaries (income multiplier) in Table XI is $667,900 or 3.22 (1 + 2.22) times the initial wages and salaries of $207,700 created by a $1 million increase in output of pulp and paper mills. Similarly, the initial $394,400 in Gross Domestic Product compared to the total impact of $1,442,200 gives a multiplier of 3.65 (1 + 2.65).

Multipliers for the pulp and paper industry, with those for selected other industries for New Brunswick, are compared in Chart IV. They include employment, wages and salaries and gross domestic product.

A word of caution is required in respect to the use of multipliers. THEY ARE NOT TO BE APPLIED TO TOTAL OUTPUT LEVELS.

The fact that pulp and paper multipliers are less than for some industries but greater than others does not mean that the industry has more or less impact than any other industry. They are merely ratios of initial impact to final impacts. For example, although the meat, dairy and fruit industry has a much higher multiplier for G.D.P.; the initial impact on G.D.P. may have been so low in meat, dairy and fruit processing, that for pulp and paper mills the total impact may still be much higher for the same dollar value of initial output.

However, one thing is clearly obvious - as more processing is applied to the raw material extracted from the Province's resources, the impact on the economy increases at a far greater rate than the processing taken by itself.

CHART IV

New Brunswick Multipliers for
Wages & Salaries, Employment & G.D.P.
Various Industries